

# AN EARLY INVESTIGATION OF THE STRIATED TAIL OF COMET HALE-130PP (C/1995 01)

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The fragmentation model for the striated tails of dust comets (Sekanina & Farrell 1980) has been applied to two images of comet Hale-Bopp to study the motions of 12 striae in the time span of 12-15 March 1997. The model was “found to fit the measured points virtually perfectly, indicating that particles in the striae had originated from outbursts in the period of time from the end of January to the second half of February 1997, or some 60 to 40 days before perihelion. The radiation pressure accelerations of the parent particles are determined to have been in the range of  $0.3 < \beta_p < 1.0$ , with a median value of  $\langle \beta_p \rangle = 0.55$ . The sequence of ejection times  $t_e$  for the individual striae derived by forcing  $\beta_p$  to coincide with the median value show clear evidence of a periodicity of  $11^h 21^m$ , consistent with the results derived from jets. On the other hand, the fragmentation times  $t_f$  exhibit a more complex behavior, with the fragmentation lifetime  $t_f - t_e$  of the parent particles generally decreasing with decreasing heliocentric distance. However, when corrected for the varying exposure to solar radiation, the normalized fragmentation lifetimes for 11 out of the 12 striae are nearly constant, from 12.6 to 14.8 days at 1 AU from the Sun. The peak fragment accelerations are mostly in the range of  $1.0 < (\beta_f)_{\text{peak}} < 3.0$ , only occasionally exceeding 3. Our limited analysis of Watanabe *et al.*'s (1997) measurements of striae on their images from three days in the period of 5--9 March 1997 shows that four of our striae were detected by them as well. We identify and follow the motions of additional six of Watanabe *et al.*'s striae throughout the 4-day period, establishing that the normalized fragmentation lifetimes of dust particles in the striae observed in the period of March 5-9 are systematically shorter, only 7--11 days, than in the striae observed in the period March 12-15. Our investigation of the striated tail is continuing.